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GENERAL PRINCIPLES OF EXERCISE THERAPY

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Exercise has long been recognized as essential for anatomical and functional recovery in disturbances of the musculo-skeletal system. The development of muscle atrophy and weakness, joint limitations, loss of motor skill, and abnormal substitution movements may nullify the very best surgical treatment. The success of any rehabilitation service depends to a large extent on its organization for the earliest possible application of therapeutic exercises to prevent these significant impediments to maximal recovery within the limits of the disability.

What has not been generally realized in medical practice is the fact that the neuro-muscular system has enormous reserve capacity which is ordinarily not utilized, but which can be developed if needed. In the rehabilitation of all types of physical handicaps, a phase of medicine which has undergone dramatic growth since World War II, exercise is the cornerstone of treatment in developing these reserves so as to attain maximum functional capacity. More recently it has been realized that in cases of prolonged illness, associated with a reduction in functional activity, there is a general deterioration of the musculoskeletal system leading to extended incapacity during the period of convalescence. This period of deterioration is associated with a series of metabolic and physical changes aptly called "deconditioning." In the past the approach to the process of deconditioning has been entirely negative and practically no effort was made to combat it. In fact, medically prescribed bed rest fostered it.

In order that exercise therapy attain its maximum usefulness, the physician must understand the basic principles for such therapy and prescribe it whenever indicated, in the right dosage at the proper time, in the appropriate form, and under skilled supervision.

At this time it may be pointed out that exercise can be given in many forms, from passive, through active assistive and active, up to resistive types, including a combination of all four of these in the form of functional exercise, the latter being selected calisthenic exercises used for therapeutic purposes. The beneficial effect of exercise depends on muscle contraction. In passive exercise the benefits derived from muscle contraction are minimal and are due to stimulation of the stretch reflex; but in all other forms such benefits are progressively greater in proportion to the amount of work done by the muscle.

GENERAL EXERCISES

General exercises have been shown to prevent the phenomena produced by disuse or immobilization. In the classic studies of Deitrich, Whedon and Shorr[1] it was found that lack of activity produced excessive nitrogen excretion. Calcium output was increased. In the absence of appreciable increase in urine volume, a slight rise in urinary pH and failure of urinary citric acid to rise parallel with the increase in calcium, precipitation of calcium phosphate in the urinary tract was favored. There was an increase in the excretion of phosphorus, total sulfur, sodium, and potassium. Creatine tolerance was definitely lowered and this impairment was accompanied by a significant decrease in muscle mass and strength. There was a slight decline in the basal metabolic rate, and there was an increased tendency to fainting in tilt-table tests. This latter symptom is probably due to increased venous engorgement, increased extravascular fluid, increased capillary fragility, and impaired venous or muscular tone in the lower extremities. There was a decline in total blood volume and in exercise tolerance. There was a slight increase in resting pulse rate and a further increase during the first weeks of recovery. Under normal conditions of food intake, changes in body weight were small because loss of muscle protoplasm was balanced by storage of fat or carbohydrate.

With the return of activity there is a reversal of these processes, the speed and completeness of which depends to a large extent upon the exercise given.

In Dietrick, Whedon and Shorr's experiments a considerable portion of the body was immobilized; however, it has been noted by others, such as Thompson,[2] that in immobilization of single limbs there is uniformly a more marked deterioration than would be expected from the loss of muscle tissue from the immobilized limb alone. In clinical practice it is obvious that the amount of work done by the body as a whole in persons who are regionally immobilized is much less than that of an indivdual engaged in normal unrestricted activity. This general principle is also true from a functional as well as a metabolic standpoint, since a muscle never works alone. The use of a limb involves the coordinated activity of many muscles in the rest of the body. Exercises aimed at their redevelopment must always be combined with exercises aimed at coordination with the rest of the locomotor system. A muscle which has lost a great part of its activity, either by denervation or immobilization, therefore, has distant effects, both metabolically and functionally.

LOCAL EXERCISES

There has been considerable controversy regarding

the general concept of re-education in relationship to the development of specific muscles whose contractile power has been impaired. There are some who believe that these muscles can be exercised better by gross movement than by focalized exercise. They point out that attempts at movement against resistance produce a wide irradiation of impulses. Thus contraction of muscles in one extremity is accompanied by electrical activity in the same muscles on the opposite side which are not being exercised. Hellebrandt et al[3] have shown that this small amount of contralateral activity, which may not be visible to the naked eye, is non-the-less sufficient to reduce the rate of atrophy in such muscles when disused. On this basis it can be assumed that in producing a resisted movement maximum impulse will be brought to the weakened prime mover and synergists, the latter working excessively in the presence of reduced function of the prime mover. Such impulses will irradiate even to muscles which normally do not take part in the specific movement. However, most patients learn quickly how to dodge the use of ineffective or painful muscles. These substitutive movements are compromises, and they have often been observed to maintain or even produce further atrophy of the involved muscle. Frequently, in poliomyelitis of many years standing, more normal movement patterns can be easily and quickly retrained, indicating that over the passage of years substitutive movements have become habit patterns in spite of reinnervation of muscles. Focal exercise retains its importance in preventing substitution or habit patterns. However, there are many who would prefer to limit general movement patterns during the period of focalized exercise, feeling that substitution at any time should not be permitted. There are others who believe that it is more rational to continue training of general movements, but that during this period of training the patient should be pushed more and more toward a normal pattern, feeling that this type of therapy throws the greatest load upon the involved muscles in a functional way. By combining these methods it is probable that functional recovery is hastened.

LOAD AND RANGE OF MUSCLE

Heidenhain and Fick (4) have shown that heat production of a muscle decreases as the load gets smaller, and conversely that the larger the load the greater the heat production. Hill (5) demonstrated that the energy of a contraction is not set free in an all-or-none outburst, but continues to appear throughout the period of shortening. Heat production is proportional to the work done by the muscle. The work done by the muscle is the adequate stimulus for its increase in bulk. It has been shown by DeLorme (6) that a progressive increase in the amount of work done by a muscle by gradually increasing its load produced a progressive increase in strength of that muscle. In muscles whose power and bulk have been reduced by disease, such as poliomyelitis, Krusen (7), has shown that exercise, increased progressively by mechanical means, produced a further increase in bulk and power above that reached by muscle re-education and resistance supplied manually. This was not due to further innervation but to an increase in muscle fiber size. Thus a muscle contracting through its full range with optimum load receives full exercise value.

It is obvious that a contracted muscle is one that is inefficient both from the standpoint of function and from the metabolic point of view. In the treatment of a contractured muscle, it must be realized that there are two different types of tissue involved, the contractile elements themselves, and the meshwork of fibrous and connective tissue which consolidates at either end of the muscle to form the tendinous attachments. Exercise of a muscle will produce an increase in size of muscle fiber, but its length depends to a great extent on the state of the supporting fibrous structures. Fibrous tissue, when immobilized, exhibits the primary property of continuous shrinkage, but responds to stretching by lengthening. This stretching can be most efficiently accomplished by strong contraction of the antagonistic muscles performed against a heavy load. Therefore, efficient treatment of a contracture of a muscle would consist of contraction against a heavy load and through as full a range as possible of both the prime movers and the antagonists. By the same token contracture of other soft tissues, such as ligaments and capsule, which are basically fibrous in structure, can best be accomplished by strong contraction of the antagonist in addition to careful passive stretching.

In order to achieve the results desired it is essential to have a thorough knowledge of muscle action, both under normal and pathological conditions. To cite an example, the quadriceps femoris is ordinarily believed to act as one muscle. It is actually composed of four muscles, having three distinct physiologic actions. The rectus femoris, besides being an extensor of the knee, is also a flexor of the hip, because of its origin in the pelvis. The vastus lateralis and intermedius are extensors of the knee which lose their mechanical advantage before full extension occurs. The vastus medialis is most effecient in extending the knee through the last 15 degrees of extension. Thus proper exercise for the quadriceps must include complete shortening of all parts of that muscle; namely, full extension of the knee followed by flexion of the hip in the extended knee position, and the load carried must never be heavy enough to prevent the knee from coming to full extension.

DOSAGE

To be truly effective exercise should be given frequently enough. It seems illogical that a patient be

given 15 minutes of exercise and then to be allowed to disuse his muscles during the other 23-3/4 hours of the day. Two or three exercise periods during the day, within the patient's tolerance, and using a variety of modalities, including occupational therapy to stimulate interest, should be more effective than allowing a patient to manage his own exercise by the bedside.

It has been commonly said, especially by those working in the field of poliomyelitis, that vigorous exercising damages muscles. Evidence for this concept is rather tenuous. We, and others (8) have not been greatly influenced by it and have not noted any ill effects from loading a muscle to its optimum in the convalescent stages.

It is very difficult to determine the maximum load a muscle can carry. This theoretical load should be one which the muscle can carry through a full range only once. For practical purposes we select such a load which can be carried through full range ten times. From experience it has been found that this load is about 2/3 to 3/4 of maximum. This load is defined as optimum. In the technique evolved by DeLorme (9) the load is determined on a weekly basis, whereas it has been our policy to test for the optimum load on a daily basis. This latter procedure seems more rational to us since improvement is a dynamic day to day process. Progression is achieved by progressively increasing the load as strength improves, rather than by an increase in the duration of the exercise period. For weak muscles the resistance supplied by the therapist's hands is adequate, but as the muscle grows stronger resistance should be more carefully measured and supplied by mechanical means.

Wherever resistance is supplied the muscle must be prepared by a series of exercises with lighter and rapidly increasing loads until the optimal load for that day is reached. This "warm-up" period increases the temperature of the muscle, and therefore, its metabolism. Muscle blood flow may be increased up to tenfold. (10) These physiologic effects render the muscle more efficient, improve oxygenation, and carry off metabolic wastes.

During the entire exercise program careful periodic follow-up is most essential, since failure to show improvement within a reasonable period of time is an indication for change of therapy. Very often dosage is limited to a point below its exercise value because of pain. After careful evaluation of the patient, pain should be eliminated by the various modalities available, such as heat, ethyl chloride spray, novacaine injection, histamine or nupercaineion transfer. Thus painful inhibition is prevented from causing atrophy or painful contracture. All therapeutic exercises should be rhythmic and periodic to permit clearance of exercise metabolites.

With the recent increase in use of exercise therapy elaborate equipment has been devised to deliver carefully measured dosages. In our experience the placing and posturing of the patient in such equipment consumes an excessive amount of time and reduces the number of patients which could be treated in the course of a day. Intelligent prescription writing will enable a well-trained therapist to accomplish the desired results with simpler equipment, such as pulleys and weights.

As a general rule, these principles of therapeutic exercise are applicable to locomotor disabilities irrespective of whether their primary source is in the musculo-skeletal or nervous systems. Modifying and limiting factors are usually those found in the cardiovascular and pulmonary systems, such as the presence of cardiac failure or pulmonary tuberculosis.

CONCLUSIONS

(1) General exercises prevent the metabolic deterioration due to disuse, or "deconditioning."

(2) General metabolic deterioration can occur not only as a result of bed-rest but also in local immobilization or denervation.

(3) Early in the course of treatment, exercises should be directed towards movement, even substitutive, rather than to individual weakened muscles.

(4) Exercise later in the course of treatment should attempt to eliminate substitution, if possible, to prevent habitual abnormal movements.

(5) In order for exercises to have full therapeutic value, optimal loads should be carried through full range of motion.

(6) Contracture of a muscle can be treated by contraction of that muscle as well as its antagonist, each against an optimal load and through as full a range as is possible.

(7) Periods of therapeutic exercise should be repeated more than once a day.

(8) Optimal load is defined as 2/3 to 3/4 of maximal load.

(9) Muscles should be gradually "warmed-up" before optimal load is used.

The authors wish to express their thanks to Miss Birdie Cooper for her aid in preparation of the manuscript.

REFERENCES

[1]Deitrick, J. E., Whedon, G. D. and Shorr, E.; Am. J. Med. 4:3, 1948.
[2]Thompson, T. C.: J. Bone & Joint Surg. 16:564, 1934.
[3]Hellebrandt, F. A.; Parrish, A. M.; Houtz, S. J.; Arch. Phys. Med. 28:2, 1947.
[4]As quoted by: Lipschutz, A., and Audova, A.: J. Physiol. 55:300, 1921.
[5]Hill, A. V.: Proc. Roy. Soc. London, S.B. 126:136, 1938.
[6]DeLorme, T. L.: J. Bone & Joint Surg. 27:645, 1945.
[7]Krusen, E. M., Jr.: Arch. Phys. Med. 30:4, 1949.
[8]Mead, S., J.A.M.A. 144:6, Oct. 7, 1950.
[9]DeLorme, T. L.: Arch. Phys. Med. 27:607, 1946.
[10]Abramson, D. I., Vascular Responses in the Extremities of Man in Health and Disease: 1944—University of Chicago Press Page 150.

A COMMUNITY REHABILITATION PROGRAM*

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At this annual meeting of The Tuberculosis and Health Association, I am going to discuss what additional work in rehabilitation such a group should be prepared to do to help out in a community.

Such a discussion does not exclude aid that local health agencies or hospitals, or that societies like the National Poliomyelitis Foundation, the National Society for Crippled Children and Adults, the Junior Leaguers or others might care to contribute. However, if nothing could be expected of them, the ideas presented in this paper might indicate how rehabilitation could be started on a modest, local scale.

An organization like the Cambridge Tuberculosis and Health Association already has a staff trained in solving health problems, has had experience in the difficult field of Tuberculosis Rehabilitation and has a large number of volunteer civilian workers who are well known in the community and able to help out in a practical way.

A plan for helping in community rehabilitation should be considered at this time because of the decrease in the number of cases of tuberculosis. Those of the older age group, who have multiple handicaps and are in need of additional rehabilitation, are more frequently infected. The local Tuberculosis and Health Association needs only to enlarge the scope of its work with hospitals, state vocational groups and with the other medical facilities available, expand its work and extend the benefits of rehabilitation to its community.

January, February and March 1951 witnessed the meetings of the newly formed Rehabilitation Committee of the Cambridge Community Council. Its regular monthly meetings had been devoted to talks about, and discussions of, the existing facilities in Cambridge and vicinity and how they could be utilized in a community rehabilitation program.*

At one of their earlier meetings the Community Council members had been informed that the need for services in rehabilitation was real but that little was being done concerning it on a community basis. A brief outline of the possible existing resources that could help in rehabilitation and their limitations was presented:

(1) The Occupational Therapy worker at the Cambridge Tuberculosis Sanatorium. This worker must keep occupied with Sanatorium work.

(2) A Recreation Committee of the City. They informed a representative of the Council that they could not help out.

(3) Visiting Nurses' Association. They stated they could not support a Rehabilitation Service unless they realized a financial return.

(4) The Division of Vocational Rehabilitation of the Department of Education which offers counseling, training, and employment service to handicapped persons in the State. The patient must be employable to get the benefit of this service.

(5) The Massachusetts General Hospital and the affiliated Bay State Clinic which opened June 15, 1951. This was said to be primarily for those who could be returned to useful employment.

Other suggestions were the possibility of utilizing:

(6) The Junior League and its members to help support the Rehabilitation Program.

(7) The Arthritic Foundation and its members to help in rehabilitating their type of patient.

(8) The Cambridge Committee on "Recreation for the Elderly." This group had been considering a program patterned after the Altro Workshop in New York City.

The April meeting of the Rehabilitation Committee of the Cambridge Community Council consisted of talks, discussions, and questions about the existing facilities in Cambridge and vicinity. This was led by a representative of the Massachusetts General Hospital and Bay State Clinic who discussed his project, by one from the Liberty Mutual Rehabilitation Clinic who described his insurance clinic, and by this speaker who discussed some of the voluntary and other private groups in Cambridge which might be of help in contributing to the total rehabilitation picture.

Many other states and communities have similar facilities, but we shall discuss the role of some of the agencies in Cambridge, their past, present, and possible future contributions to the Community Rehabilitation project.

To the active members of the Massachusetts Tuberculosis and Health League there is little need to recount how much and for how long this State has been among the leaders in the rehabilitation field in the case of the tuberculous. This statement also

*Read at the annual meeting of the Tuberculosis and Health League, Hotel Commander, Cambridge, Mass., May 3, 1951.

**Any opinions or ideas expressed in this paper are those of the author and do not reflect in any way on the Army, Navy, Veterans Administration, Cambridge Tuberculosis and Health Association, or any other public or private agency or commission.

*Secretary's Reports of Meetings of Cambridge Community Council, Rehabilitation Committee.

holds true for many of the Veterans Administration Hospitals. To those present who have never heard of, do not realize, or have forgotten the above, a brief review taken from a report of the Rehabilitation Committee to the Executive Committee of the Massachusetts Tuberculosis League in 1946 is in order.

As early as 1923 the central New England Sanatorium Colony in Rutland began offering sheltered employment services to some of the tuberculous patients referred there. Later, the City of Boston Tuberculosis Association had employed a placement secretary, and the work she began was increased to include the sheltered workshop project in 1930.

In 1938 the position of Rehabilitation Secretary was created, and about this time the Central New England Sanatorium Colony in Rutland was turned into a vocational school for the tuberculous with "multiple handicaps" and was renamed the Rutland Training Center. At that time none of the county or city sanatoria employed rehabilitation counselors, although the Essex and Middlesex County Sanatoria had established Occupational Therapy Departments. None of the sanatoria performed the testing and counseling so necessary to the complete rehabilitation of the patients.

In 1940 the State Conference of Tuberculosis Secretaries approved the plan to train and employ Rehabilitation Counselors and the first rehabilitation worker was secured and employed jointly by the Cambridge Association and the Cambridge Tuberculosis Hospital. The initial studies began in 1938 revealed the need not only for an in-sanatorium counseling program but for the extension of these services to the tuberculous and their families in their homes.

Many of the 1946 objectives for the future have been pretty well attained to date, inculding: (a) correlation of the state-wide program of testing, counseling and guidance of the tuberculous and their families with the established state and federal agencies and institutions for the control of tuberculosis; (b) cooperation between tuberculosis counselors who work with the patients while they are sick and vocational educators who take over when the patient has recovered sufficiently to be prepared for employment; (c) collaberation with the local departments of Public Health, the State, and Veterans Administration.

It is my opinion that the next step for a community like Cambridge would be to extend the kind of Rehabilitation work done by the Cambridge Tuberculosis and Health Association to other types of handicapped individuals. The local Tuberculosis and Health Association with its existing facilities; its knowledge of the difficulties of rehabilitation in tuberculosis; its experience in working with other public health and social agencies in the community, the state and the federal government; its lists of active volunteers on the Board of Managers, and its many experienced committee and subcommittee members, is at present an ideal voluntary agency around which one may begin to build a general Rehabilitation Program. For a number of years this association has been identified with other part-time health activities besides its work in tuberculosis. Last year a cardiac worker was employed and helped in rehabilitating cardiacs by supplying occupational therapy activities in the home and securing vocational counseling, guidance, and education for some of the cases, when indicated. For a number of years the local association sponsored unpaid, but active, cancer and social hygiene committees that worked with and helped out in the national and state programs.

Other existing facilities, besides the Cambridge Tuberculosis and Health Association, which should be considered for future help in a rehabilitation program are:

(1) The Cambridge YMCA and YWCA. They were asked if they could aid and, as in the past, they have, again, demonstrated a willingness to furnish a diversional, recreational, and rehabilitation program. A good example of the help of the Cambridge YWCA is the group therapy offered jointly by the Cambridge Tuberculosis and Health Association and the Cambridge YWCA to a number of ex-sanatorium patients, most of whom were housewives. They were taught the latest methods in how to dress, decorate the home and provide wholesome home recreation. Quoting from a statement of the local tuberculosis association: "This year many of this group have been absorbed into the regular activities of the "Y," the initial endeavor having served its purpose of helping to bridge the gap between the sanatorium and the normal social contacts in the community, one of the objectives of our Rehabilitation Program." In addition, health education is furnished by the rehabilitation counselor in this atmosphere.

At the local YMCA, Camera, Chess, and Dramatic clubs function. An arts and crafts section is situated in the Boys' Room. Outings are held. Playrooms have ping pong and billiard tables, and a swimming pool is available when the regular members' swimming classes are not held. Those with quiescent tuberculosis or any of the other partially handicapped individuals or groups interested in preventing spiritual, mental, physical, or social deconditioning can utilize this rehabilitation facility when proper arrangements are made. Poliomyelities patients and others with residual disabilities can and do use the YMCA pool, the gymnasium and the other facilities. The Boston YMCA has a similar setup but is larger and more complete.

(2) The Cambridge City Hospital. It has a Department of Physical Therapy which has been enlarged and improved. It handles about fifty patients

a week on the three days that it is open. This could be increased both in the number of days that the department is open and the number of workers helping out in Physical Therapy. It is an active section of the hospital and an important nucleus in community rehabilitation judging by the statement of the Committee on Rehabilitation of the United Community Services of Boston which recommends that there should be a department of Physical Medicine in a hospital before setting up a rehabilitation service. They decided that a community-wide organized program should have the hospital as a base. The Boston City Hospital has a similar setup but is larger and more complete.

(3) A private rehabilitation gymnasium in Cambridge. The Cambridge Rehabilitation Gymnasium, centrally located, has the space and equipment for physical exercises which can be utilized to do testing for physical tolerance or to maintain and increase the activity begun in the tuberculosis sanatorium and continued in the workshop or at home. The benefit of carefully graded activity started by the rehabilitation workers in the sanatorium, if not continued in a sheltered workshop or at home, may be lessened or lost by idleness or by working at a sedentary occupation. Stress on learning scientific, progressive relaxation, maintaining and developing range of motion and muscular strength by supervised, graded activity in a corrective gymnasium may be the only way to prevent regression, in many individuals.

(4) The Department of Public Welfare, which takes care of the aged, is an active existing agency which should be employed more often. The elderly, like many of the tuberculous, often suffer from "multiple handicaps." They are helped in their rehabilitation by receiving old-age assistance and medical expenses. An example is a case I was called in to see at home. She is a lady seventy years old who complained of pain in her back a swell as soreness in an old fracture site in her left hip. She was seen at home and arrangements were made to have her treated with physical therapy so that she would be able to continue her self-care as well as her work around her home. For such elderly people able to get out, the YMCA and YWCA could offer their equipment to help in a diversional and recreational program. This should be supplemented by visits frim an occupational therapist to other aged unable to leave their home.

(5) The Massachusetts Institute of Technology swimming pool. The M.I.T. pool in Cambridge was used in the past and could be of help in the future, for swimming exercise and instruction for a group of disabled children.

(6) The Rehabilitation Commission, Department of Industrial Accidents, may be of help in a community rehabilitation project. There have been cases of compensable tuberculosis, i.e., if a nurse or orderly contracts the disease in a hospital while working in close contact with patients. If they are proved compensable they are entitled to complete rehabilitation paid for by the insurance company and sponsored by the newly formed Rehabilitation Commission. Silicosis, leading to tuberculosis, is another example of a compensable industrial injury. In addition to the above, any individual seriously injured in a tuberculosis hospital covered by workmen's compensation may be furnished complete physical, educational, and vocational aid.

(7) Included in the Cambridge Rehabilitation project should be activities such as the personal counseling services that can best be given only by the minister or the leader of the church group to which the patient belongs.

(8) Whenever necessary, the program of physical rehabilitation for the seriously injured or for any injury no matter how received should seek the services of the already established Rehabilitation Centers. It should be understood that the arthritics and hemiplegics as well as those with the less common conditions such as poliomyelitis, multiple sclerosis and cerebral palsy can be offered the benefits of inexistive rehabilitation service.

If it is true that the deaths from tuberculosis are decreasing about one-third each ten years since 1900 and that this rate of decline is expected to continue, then it may not be too early for the various tuberculosis and health associations as well as some of the other agencies in a city to consider seriously the possibility of helping out with the general community rehabilitation program in other ways than with only the tuberculous.

All the existing public and private facilities should be investigated and utilized when possible before starting a new local poliomyelitis, cerebral spastic, multiple sclerosis, or similar rehabilitation foundation or project.

The advisability and importance of a type of community organization that "enlists and uses every service of every agency and every person who can contribute to the maximum development in the disabled of their residual capacities for more satisfying living," * should be stressed.

SUMMARY AND CONCLUSION

All the existing public and private agencies should be carefully evaluated and eagerly utilized before jumping into a totally new project which will lead to duplication of effort and unnecessary expense to the community. The Cambridge community, in common with many other communities, has facilities for the institution of an active Rehabilitation Program.

**Public Health Reports*, April 27, 1951, A. L. Chapman, M.D., and J. H. Gerber, M.D., "Rehabilitation, The Role of the Health Department."

PRACTICAL BODY MECHANICS FOR HOSPITAL WORKERS

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About two years ago the subject of body mechanics became of considerable concern to the Director of the Psychiatric Aide Training Section of a large neuropsychiatric hospital in Southern California. Over a six months period the aides in this hospital had experienced 19 lost time accidents attributable to improper techniques in the use of the body. In addition complaints of excessive fatigue were common. A unit on body mechanics was added to the curriculum of the Training Section and arrangements were made to have a Corrective Therapist teach it. During the following six months period 11 such lost time accidents were recorded; in the next similar period only one took place. The value of this subject has thus been demonstrated in a most convincing manner, and it is understood that an outline of the material taught in this course is at present being used to train supervisors in a New York hospital.

Some appreciation of the importance of proper body mechanics may be gained from the fact that according to one study various authorities hold that poor body mechanics results in wasted energy, muscular strain, backache, headache, sciatica, pains in the cardiac region, brachial pains, finger weakness, nervous derangements, insomnia, neurasthenia, visceroptosis, digestive distrubances, constipation, cyclic vomiting, hemorrhoids, irritability, albuminuria, painful menstruation, foot defects, defective respiratory development and cardiac deficiency![1]

Most Corrective Therapists have had a more or less extensive indoctrination in body mechanics during their days as students of physical education. Of necessity such courses deal mainly in generalities, leaving it to the student to apply these principles to any particular problem with which he may be confronted. In practical situations, however, teaching by such methods is usually disappointing to both the teacher and the pupils. Workers are not interested in abstract principles; they want definite instruction in how to do their work in the easiest and safest manner. Unless the instructor is personally acquainted with the duties and requirements of a given job, he may find it difficult to make his teaching specific.

The following material is presented in the hope that it will be of use to others who may teach courses for hospital workers. In spite of the title of the article, it will be obvious that the first several paragraphs are theoretical in part and are not designed for presentation to the students in the form given. However, an understanding of these points is necessary if the instructor is to be prepared to answer the questions which will inevitably arise.

All mechanical contrivances are more or less complicated elaborations of one or another of the six simple machines: the lever, the pulley, the wheel and axle, the inclined plane, the wedge and the screw. From the practical mechanical standpoint the human body consists of a series of articulated levers operated by cables of muscle. Most of these levers are of types better designed for speed and range of motion than for power. Further, muscles can exert their full force only when acting at right angles to the lever. This condition seldom exists in the body, where the muscles are apparently shaped to occupy a minimum of space rather than to exert great force. Because of the inefficient angles at which many of them must operate, the strain on muscles doing only simple, routine movements is tremendous. Strait, Inman and Ralson have calculated that when a man weighing 180 lbs. picks up a fifty pound weight by bending over at the waist, the tensile force in the effective erectoris spinalis must approximate 750 pounds and the compressional force on the fifth lumbar vertebra is nearly 850 lbs. [2]

Evolutionists tell us that many of the mechanical difficulties experienced by the body have resulted from man's assumption of erect posture. While this is accompanied by many advantages, such as raising of the head, enlarging of the range of vision, freeing of the forelimbs for manipulative acts, etc., it has placed an essentially quadruped form in a position for which it is in many ways structurally inadequate. The human spine is a compromise between flexibility and strength—two contrasting properties. The fact that basically it is simply an erect bar resting on two supports throws great stress on the structurally weak and vulnerable lumbrosacral junction. Many of the leading orthopedists insist that the lumbrosacral joint is the true site of the location of the troubles which the laymen commonly attribute to the sacroiliac joint. The construction of the latter, argue these authorities, is so rugged that only occasionally can it be the seat of trouble.

As one gets older the intervertebral disks harden

and lose their elasticity. The elderly, the underdeveloped and the obese are predisposed to mechanical backaches. In most instances these aches are not the result of severe injury, but are traceable to a continued mild overstretching of the muscles and ligaments involved. Wells comments that bed making is a "pernicious" activity for those having susceptible backs. If such work cannot be avoided, she recommends standing with the site close to the bed, one foot forward and one back, and the knees bent, thus eliminating some of the strain on the back. In reaching across the bed one foot should be placed as far under the bed as is possible and one hand should rest on the head board or foot board, thus taking some of the weight and helping to enlarge the base of support. [3]

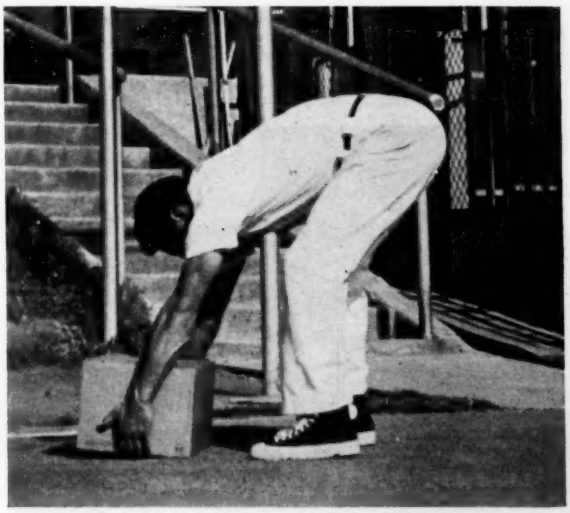
Physical anthropologists point out that in the quadrupeds the pelvis is a bony cylinder. The pelvic viscera is supported by the elongated ventral symphysis and the weight of the abdominal organs is supported by both the mesentery and the abdominal wall, as the abdominals join the pelvis to the ribs and sternum and hold up the arch of the spine against the weight of the trunk. In man the front part of the pelvis has rotated downward and backward. The symphysis no longer supports the weight of the viscera. To hold the abdominal contents in place calls for a considerable tension of the abdominal wall, but as it is no longer necessary for these muscles to be kept in contraction to hold up the arch of the spine, they tend to relax and these organs are sustained principally by the mesentery. The result is an increased susceptibility to hernia.

It is a common misconception among laymen that hernia results from the strain of lifting. Some years ago *Hygeia* reported that a study of draft statistics from World War I showed that there is no higher percentage of hernia amongst workers who do heavy lifting than amongst those engaged in sedentary occupations. It was concluded that hernia results from an innate defect in the abdominal wall, and that where such a defect exists hernia would in any event be likely to occur sooner or later. *Hygeia* pointed out that it seemed unlikely that any appreciable benefit is derived from preventative exercises. [4]

To best offset these mechanical difficulties requires the use of the most efficient techniques of body mechanics. The most serious problem confronting the worker is that of properly lifting heavy objects. An investigation by Barton of fifty cases of back pain revealed that 67 per cent of those reviewed claimed to have injured their back by lifting. [5] A study of the techniques employed by weight lifters shows that their methods may be reduced to six cardinal principles:

1. The feet should be kept flat on the floor. Do not balance on the toes.
2. The legs should be spread a comfortable distance (about twelve inches) apart to increase the stability of the body. If the stance is too wide the muscles of the groin are more easily strained.
3. The weight should be kept as close to the lifter as is convenient.

Proper position for lifting. Feet about one foot apart, weight as close to the body as is comfortable, knees bent, throwing the major portion of the strain on the quadriceps femoris. "Squat, don't stoop."



Improper position for lifting. Note that the feet are together, the weight is away from the body, the legs are nearly straight and the body is bent at the waist, throwing the major portion of the strain on the spinae erectoris.

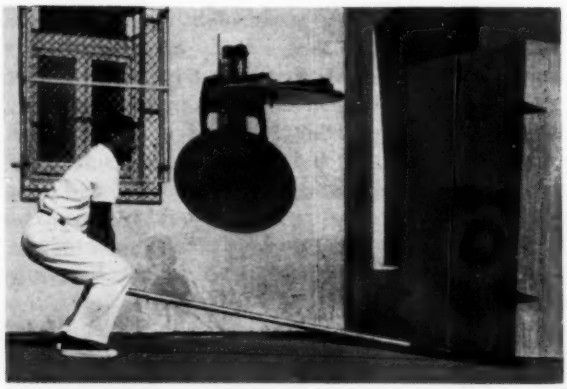
4. The spine should be kept as straight as possible.
5. The actual lifting should be done by the largest and strongest muscles which can be utilized for the purpose—usually the extensors of the knees. In most cases the knees should be bent, the object grasped in the hands, and then lifted by contracting the extensors of the knees and straightening the legs, not by pulling upward with the arms and back.
6. The lifter should face in the direction in which he intends to move.

Upon careful analysis it will be found that almost all forms of work will be performed most efficiently when these principles are kept in mind. In trying to open the traditional stubborn pullman window, one should stand close to it, bend the knees and lift the window by straightening the legs. The usual method of bending at the waist and trying to lift the window by arm strength alone often results in failure. When folding linen, carrying a tray or wielding a mop the object being handled should be kept close to the body. In wringing out a mop one should face in the direction in which the wringer handle rotates, not in the direction of the wringer. When moving a bed patient or a heavy piece of furniture one should face in the direction of proposed movement, not at right angles to the line of direction of movement, as is so often done. When bathing a bed patient, he should first be moved near the edge of the bed. Trying to work with a patient on the far side of the bed requires that the back be bent and thus placed in a position in which it is particularly susceptible to strain.

Proper position for moving patient in bed. Patient close to edge of bed, nurse usign quadriceps femoris for lifting and facing in direction of proposed movement.

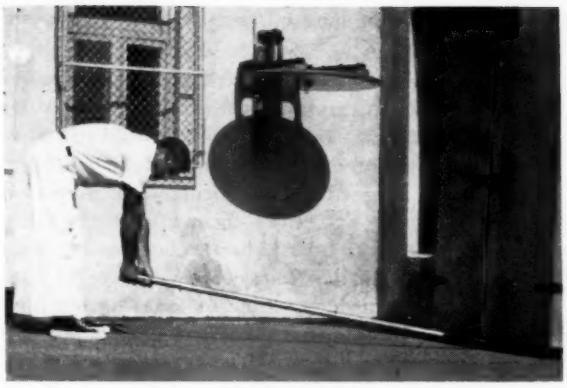
Improper position for moving patient in bed. Patient on far side of bed, nurse using spinae erectoris for lifting and facing at right angles to direction of proposed movement.

Utilization of the largest and strongest muscles available displays many interesting aspects. In certain forms of warehouse work objects must be lifted with one hand and stacked higher than one's head. With experienced workers the arm starts on the bent thigh and the greater part of the lift is actually done by a quick contraction of the knee extensors, not by placing the strain on the muscles of the shoulder girdle or back. A very instructive example of a similar use of these muscles may be found in such an unlikely place as *Brewery Gulch,* a comparatively recently published bit of Western Americana. In describing the rock cutting competitions between the hard rock miners, the author notes that as the drillers swung their hammers they bent at the hip and knee, caught the lower arm on the top of the thigh and threw the hammer back by a quick jerk of the leg.[6]



Proper method of using a lever. Strain on quadriceps femoris.

The problem of carrying loads is basically that of limiting insofar as possible the amount of displacement of the body necessary to bring the center of gravity over the feet. Heavy materials, such as pails of water or quantities of laundry, are best divided into two equal parcels and carried one in each hand



Improper method of using a lever. Strain on spinae erectoris.

(close to the body, of course), so that the spine may be kept straight. Where this cannot be done, as with a single suitcase, the free arm may be extended to the side to aid in keeping the back perpendicular. Any method which interferes with the natural movements of walking, constricts the chest and thus hinders breathing, creates the need for static muscular strain to hold the body in equilibrium, or otherwise hinders normal dynamics, is undesirable. The commonest cause of accidents in lifting or carrying of loads is loss of balance, resulting in unsupportable muscular strains. Certain types of workers consistently carry upwards of 400 lbs. on their backs, but they are forced into a bent position which restricts the movement of the chest and causes difficulty in walking. Nothing good can be said for such a position; one slight mis-step may cause disaster.

Proper method of assisting a patient to rise or sit. Weight close to nurse, nurse's feet apart to give a wider base, strain on quadriceps femoris.

Improper method of assisting a patient to stand or to sit. Weight away from nurse's body, nurse's feet together, strain on spinae erectoris.

Bedale measured the oxygen consumption per minute in various methods of carrying to determine the energy expenditure each required. It will be noted from the following table that the order of efficiency differs somewhat for different loads. [7]

OXYGEN CONSUMPTION PER MINUTE

	Weight in Pounds				
Method of Carrying	20	30	40	50	60
1. Tray carried in front of the body	464	522	613	675	.....
2. Tray carried in front, strap around shoulders	473	522	604	656	.....
3. Weight carried in equal bundles in each hand	455	492	534	667	.....
4. Distributed on board on left shoulder	428	547	609	608	778
5. Tray on left hip	574	657	694	725	.....
6. Rucksack on back	561	573	608	700	.....
7. Weight in two pails, supported by shoulder yoke	400	440	486	516	531
8. Tray on head	527	575	626	692	.....

When carrying bundles the most efficient handle to use is one which exerts the least pressure on the hands. Carrying pails of water, for instance, will be less fatiguing if the wire bale is covered with a handle. It has been estimated that simply holding an object is three to six times more fatiguing than lifting it; if one encounters a delay it is better to set parcels down than to stand and hold them. When carrying bundles in the hand the arms should be slightly bent at the elbows. When a muscle reaches either extreme of its amplitude, as is the case when the elbow is fully extended, it loses some of its ef-

fectiveness. Its optimal range of functioning is somewhat less than its amplitude; hence the biceps works more efficiently if the arm is slightly bent and the muscle is not in a state of maximum elongation.

Two British authorities, Bedale and Smith, report that for women the most economical load appears to be about 35 per cent of body weight. A load of about forty-five pounds would appear to be the optimum for continuous carriage, although the average woman should be able to handle fifty pounds without strain, with a possible 20 per cent additional when the load is conpact and easily handled.[8] The recommended maximum load for men is 130 pounds, although it is recognized that the amount of weight that can be safely handled is so affected by constitutional type, strength, age, experience, compactness of load, etc., that wide variations from this figure may be acceptable.

When possible, heavy objects should be pushed rather than pulled and slid rather than carried. In theory the force required to lift a weight is approximately 32 times that required to slide it, although in actual practice this difference is reduced by the amount necessary to overcome the friction involved.[9] The principles for the most efficient method of pushing are very similar to those for the best way of lifting.

1. The feet should be a comfortable distance apart, with one foot near the object to be pushed and the other extended to the rear.
2. The spine should be kept straight and the hips should be kept down.
3. The hands should be placed at the object's center of weight. Otherwise it will tend to tip.
4. The object should be pushed by contracting the extensors of the knee and straightening the legs, not by extending the arms.

German studies have shown that when pulling wheeled carts a grip at thirty-nine inches from the ground is the most efficient; a variation of six inches in either direction increases the energy consumption per unit of work. Presumably this would be subject to modification in the case of exceptionally tall or exceptionally short individuals. Once pushing or pulling has commenced, the work should proceed at a steady rate, as speeding up and slowing down are very uneconomical. A normal brisk walk (two to three miles per hour) causes the least consumption of energy.

Climbing stairs is an extremely fatiguing operation. Konz[10] and others have demonstrated that the customary method of placing the ball of the foot on the tread of the stair and then lifting the body by contracting the gastrocnemius is much less efficient than is placing the entire sole of the foot on the tread and raising the body by use of the quadriceps group. The speed of climbing stairs has been studied by Hill,[11] who found that the most efficient rate was 1.3 seconds per step.

Even if it could be assumed that proper body mechanics would be employed at all times—a very far fetched assumption— those in charge would still have a responsibility for seeing that individuals suited to the work are assigned to a particular job. A person with weak muscles and flimsy ligaments cannot safely handle heavy objects, even though he uses his body properly. In particular, men who will have to handle violent or bedridden patients should have a high mesomorphic component. When Taylor made his famous study of loading pig iron that resulted in the average daily load of 12-1/2 long tons per man per day being increased to a sensational 47-1/2 long tons per man per day, one of his first steps was the scientific selection of his workmen. Good personnel management requires the same care in assignment of psychiatric aides.

The mechanical disadvantages of the female structure indicate that where possible certain forms of work should be assigned to male aides. The angle at which women's arm bones are joined at the elbow makes it more difficult for them to handle tools, such as screw drivers, which require a rotary arm motion. The fact that women's legs incline in toward the knees makes it more difficult for them to maintain their balance, and falls to middle aged women usually result in serious injury. Work which requires the aide to stand on a stool or at the top of a ladder is more safely assigned to men, if a choice is possible. Heavy lifting, of course, should preferably be assigned to male aides, as the strength of women as measured by dynamometer tests is about half that of men.

No brief article can hope to provide answers for all the questions which might be raised regarding body mechanics. Unfortunately, those who may be assigned to teach this subject will find that it is fairly difficult to locate useful material. Rather surprisingly there appears to be no book or pamphlet available which covers the general field in a popular style. Numerous magazine articles are published on the subject, but most of them are elementary and the great majority discuss body mechanics from the "charm school" approach. In addition to the references given at the end of theis article, useful information may be found in the following publications:

Lee, Mable, and Miriam M. Wagner, *Fundamentals of Body Mechanics & Conditioning.* Philadelphia: W. B. Saunders Company, 1949. 377 pp.

Ministry of Labour and National Service, *Weight Lifting by Industrial Workers.* London: His Majesty's Stationery Office, 1944. 37 pp.

Stevenson, Jessie L.,*Posture and Nursing.* New York: Joint Orthopedic Nursing Advisory Service, 1949. 96 pp.

U. S. Department of Labor, *Lifting and Carrying Weights by Women in Industry.* Washington, D.C.: Superintendent of Documents, 1946. 12 pp.

Winters, Margaret C., "Integration of Principles of Body Mechanics and Posture in Nursing," *The Physical Therapy Review,* 29:53-58, February, 1949.

REFERENCES

[1]Ethel V. Cochran, "A Study of Body Mechanics and Its Relation to the Public School Curriculum," (unpublished Master's thesis, University of Southern California, Los Angeles, 1936), pp. 22-49.

[2]L. A. Straight, V. T. Inman, H. J. Ralson, "Sample Illustrations of Physical Principles Selected from Physiology and Medicine," *American Journal of Physics,* 15:378, September-October, 1947.

[3]Katherine F. Wells, "Practical Body Mechanics," *The Journal of the American Association for Health and Physical Education,* 19:632, November, 1948.

[4]"Questions and Answers," *Hygeia,* 5:322, June, 1927.

[5]Preston N. Barton, "Analysis of Fifty Cases of Back Pain," *Industrial Medicine and Surgery,* 18:391, September, 1949.

[6]Joe Chisholm, *Brewery Gulch,* The Naylor Company, San Antonio, 1949, pp. 113-114.

[7]Medical Research Council, *Sixth Annual Report of the Industrial Fatigue Research Board,* His Majesty's Stationery Office, London, 1926, pp. 106-108.

[8]Medical Research Council, *Eighth Annual Report of the Industrial Fatigue Research Board,* His Majesty's Stationery Office, London, 1928, p. 19.

[9]Bernice Fash, *Body Mechanics in Nursing Arts,* McGraw-Hill Book Company, Inc., New York, 1946, p. 29.

[10]Martha L. Konz, "To Determine by Oxygen Consumption the More Economical of Two Methods of Stair Climbing," *The Research Quarterly,* IV:88, May, 1933.

[11]A. V. Hill, *Living Machinery,* Harcourt, Brace & Co., New York, 1927, p. 204.

(Pictures posed by Norma Claunch, R.N., and Joseph Tosches, C.T.)

CORRECTIVE THERAPY IN THE PHYSICAL MEDICINE REHABILITATION SERVICES*

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The following remarks are submitted with the realization that there is considerable variation in opinion regarding part of the subject matter of this discussion. It is hoped that further thought and discussion will be stimulated which may lead to clarification of aims and function of Corrective Therapy as part of the rehabilitation team.

At the present time there remains some confusion in the minds of physicians, and others concerned with medical rehabilitation, as to the function of the corrective therapist and physical therapist. This seems in part due to the relative newness of the Corrective Therapy section of the Physical Medicine Rehabilitation Service as compared to the older, more established ones, and partly because of the failure to make adequately understood the allocation of areas of function of the corrective therapist in relation to the physical therapist. Though this has been attempted, for some reason it has not been widely accepted or understood by the medical personnel responsible for preparation of the Physical Medicine Rehabilitation prescription, and unfortunately also by the corrective therapists and physical therapists themselves. In some instances this has created undesirable frictions within the Physical Medicine Service which could have been prevented if the areas of functioning of each section had been better understood and accepted by all.

The fact that a treatment section recognizes and accepts limits to its range of activities should cast no reflection on it as being less worthy or less efficient. To the contrary, it would seem that greater attention to the development of a circumscribed area of treatment would tend to fulfill the mission of that section more efficiently.

When the writer first became aware of Corrective Therapy as a part of the Physical Medicine Rehabilitation Service, there was a concept that the physical therapist dealt with acute illness or injury and return to function, and that the corrective therapist dealt with development of strength and assisted in developing and mobilizing the remaining physical assets of the disabled patient. This seems to be a very reasonable concept, though lacking in specificity and one which permits variations in interpretations of the functions of these two very useful phases of rehabilitation.

Whether we like it or not, at the present time there are wide differences in the training backgrounds and orientation of personel engaged in Corrective Therapy which stems from the lack of uniform curricula afforded by the various schools of physical education from which most corrective therapists are recruited. Certain phases of rehabilitation have been standardized and well established in the training of physical therapists which have not been uniformly included in the training of corrective therapists, thereby giving rise to the assumption that the physical therapists may be in a better position to manage the earlier phases of rehabilitation because of the emphasis on pathological functioning. No doubt there are many corrective therapists who have exceptional ability and understanding of impaired muscle functioning but there are also many who do not have this knowl-

vocational adjustment goals. Continued study in

*Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

edge because the emphasis in his training has been that of normal development. The recognition of these differences in training in certain areas is no more a reflection on the Corrective Therapy section than it is upon the psychiatrist or neurologist who makes a diagnosis of frontal lobe tumor in a patient showing mental symptoms, and who then refers the patient to a neurosurgeon for operation. Both the psychiatrist and the neurosurgeon, because of particular training in a special field, have a definite part in the management of such a patient—just as the physical therapist may take care of the acutely impaired or diseased part until return of function occurs. Then the patient should be referred to the corrective therapist for developing strength of the part and the mobilization of residual physical assets. The corrective therapist and physical therapist should work in close harmony in management of the patient, the corrective therapist working with the overall conditioning of the patient and the physical therapist with the injured or diseased part until return to function has occured.

Here again there need be no comparisons as to which group does things better, the physical therapist or the corrective therapist. Each is simple carrying out a phase of rehabilitation for which he is better trained. In most instances the corrective therapist is better equipped to manage later phases of the patient's physical rehabilitation because of his training in developing motivation toward sports and stimulation to further effort. He also has an insight into the recreational aspects of physical activity because of his training in sports. He frequently is able to make use of his knowledge of the methods of controlled aggression which can be channeled into the development of optimistic attitudes and friendly rivalry on the athletic field and recreational area, thus creating in his patients the desire to "play the game" in helping himself.

In the opinion of the writer, Corrective Therapy should not develop in competition with, but supplemental to, those procedures already established as being part of Physical Therapy.

It is suggested, therefore, that conferences between representatives of these two groups, with a medical advisory board, be organized for the purpose of defining the areas in which each should function. When this has been done, and agreements reached, it would seem that Corrective Therapy would be in a better position to establish itself as a more generally recognized therapy with a clear cut rehabilitation mission to perform.

Along with the development of appropriate exercise of a formal nature, the corrective therapist should continue to expand and explore all phases of self-help care. This should be done in close association with other members of the rehabilitation team in helping the patient meet his home, community and methods to compensate for residual loss of function should be carried out.

The corrective therapist should continually strive toward objective evaluation of his work and in the reporting of progress. Procedures in reporting progress should be so constructed that data compiled would be useful in evaluating the results of procedures employed.

There seems to be a definite trend in the literature of all phases of rehabilitation which indicates a healthy attempt to place this part of medicine on a more scientific level. This has been brought about by teaming with other sciences and groups who are able to contribute their special knowledge to various phases of rehabilitation. It is suggested, therefore, that the corrective therapist be alert to joining forces with other specialties of medicine and other sciences in order to develop answers to problems in corrective exercise and factors relating to exercise and its broadest applications. This effort should be carried out at hospital level where representatives of the various medical and allied specialties are already available.

One of the prevalent problems that should be attacked is the development of some better exercise tolerance tests, and more exact means of determining exercise dosage. This could best be done in cooperation with the internist and physiologist. Because so many elderly patients have complicating arterial and cardiac diseases, a better criterion for exercise dosage should be developed. Many patients with cardiac and other complications do not receive adequate rehabilitation because of the reluctance on the part of many physicians to prescribe exercise because of the prevailing lack of knowledge on the subject of exercise tolerance in patients with degenerative changes in the cardiovascular system. The physiatrist, physiologist, cardiologist and corrective therapist working as a team should be able to close the gap of our knowledge of this subject in order that exercise could be more confidently prescribed for these elderly people.

Corrective Exercise Therapy in neuropsychiatric hospitals has proven its worth in many ways through operation of prescribed sports activities in the form of group games. Properly conducted games and sports with carefully controlled competetiveness and recognition of indivdual needs provide valuable factors for promoting resocialization. The corrective therapist, and the psychologist who has developed techniques for objective recording of behavior data, should collaborate in finding more objective means of reporting progress in developing information as to what games or parts of games and to what extent do they influence behavior—either favorably or unfavorably.

In summary, it is suggested that further emphasis be given to defining the areas in which Corrective Therapy should function and effort be made to develop these phases to a high level of specificity.

REHABILITATION OF POLIOMYELITIS PATIENTS*

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Just two years ago this month I awoke one morning after a restless night to find that I was completely unable to extend my flexed right forearm. This sudden paralysis of my triceps, added to malaise, a stiff neck and low grade fever for the previous forty-eight hours, suddenly brought me to the realization that I had poliomyelitis. Within three hours, respiration became labored and my voice took on a peculair nasal quality. One hour later an emergency tracheotomy, was done while a respirator was made ready. At the completion of the tracheotomy, spontaneous respirations were inadequate to provide for breathing, and another case of bulbo-spinal poliomyelitis was placed in the iron lung.

The neuropathology of acute poliomyelitis is well known. The characteristics of inflamation, neurone change and glial reactions are shown in Table 1. The purpose of presenting the neuropathology of poliomyelitis to rehabilitation therapists is to give each of you a better anatomico-physiologic background for your understanding of this common disease.

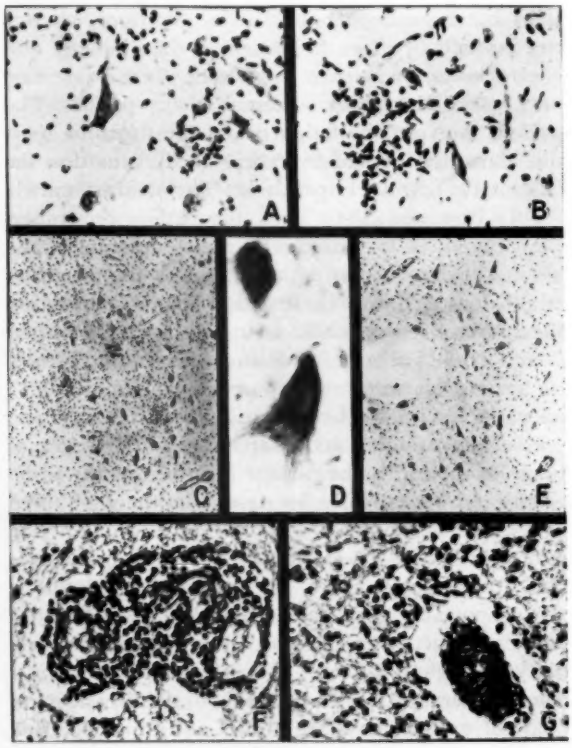
The physical therapist is the first of the rehabilitation team called in to treat the acute poliomyelitis patient. Indeed the therapist's first assignment is usually a muscle test in order to establish a baseline from which progress or progressive weakness can be plotted. Just how soon this test can be made must be an individual decision for each case. The milder poliomyelitis cases with only one muscle group or one extremity involved can usually be tested the day of admission. In patients requiring a respirator, the test may be postponed for several days while the vital functions of maintaining an adequate airway, and of combating brain stem and spinal cord edema are being controlled. Muscle tests on patients in respirators are of necessity difficult and incomplete. The negative pressure must not be lost during testing. Frequently patients are unable to take even one spontaneous respiration. The sooner testing is begun in patients with marked muscle weakness but no paralysis, the less time for loss of memory for any muscle movement or group of movements. It is well known that a patient who had a muscle paralysis may quickly forget the kinetic motor pattern necessary to contract that particular muscle voluntarily. To assist the patient during muscle testing in a respirator, mirrors can be used to allow the patient visual guidance and control of any particular movement. In a severe case only one limb should be tested at any period. The patient must not be fatigued and the therapist must not alarm the patient by calling to his attention the exact state of muscle paralysis. The weakest muscle should be tested first. Thus, the patient remembers the strength of the muscles at the completion of the test. The handedness of a patient is important to establish as well as his occupation before interpreting the results of the muscle test. Hot packs are often done for relief of pain in patients with so called "muscle spasms;" however, with pure bulbar poliomyelitis, no packs are needed because this is a painless disease.

Passive manipulation of extremities through normal range of motion is the earliest form of therapy to be given, and can usually be started in the first three days even in respirator cases. All joints available for treatment should be carried through a range of motion at least twice daily. In respirator cases, this is very important. Shoulders restricted to less than 90 degrees abduction only result from lack of early activity through full range of motion. However, in a closed respirator, it is not possible to obtain adequate range of motion at the shoulders and hips. For this reason patients, whose condition requires constant respirator assistance, should have the collar removed and be slid into the tank section of the bed. With the respirator open and the direct mask of tracheotomy resistation applied, the therapist can give as complete range of motion as the patient's muscle condition will allow. It is the responsibility of the doctor to provide the equipment and nursing personnel so that the therapist can do the best possible job for the patient. The stronger muscles should be given graduated resistive exercises with simple and complex motion. Weaker muscles may get all necessary resistance from gravity.

Where voluntary motor power is lost, but no electric reaction of degeneration is present, muscle reeducation especially in water is desirable. The patient's reaction to water can be tested first in the Hubbard tank if desirable, but this is no substitute for the therapeutic pool with its unlimited space. Patients quickly adjust to hydrotherapy and the boost to morale is often underestimated. The presence of a tracheotomy should not prevent pool therapy. Recently, we have developed an individually con-

*Read before the 5th Annual Scientific and Clinical Conference, Association for Physical and Mental Rehabilitation, Hotel Hollywood, Roosevelt, Los Angeles, Calif., July 6th, 1951.

toured latex shield with a blister which is secured to the neck and is absolutely water proof when properly fitted and secured. Swallowing is possible without the tracheotomy tube striking any part of the shield. I have worn one for over nine months of daily pool therapy and never had a leak with the present shield.



LEGEND FOR TABLE I

A—Nissl stain, spinal cord showing destruction of neurons and proliferation of microglial cells. X645.

B—Nissl stain, spinal cord showing destruction of neurons and glial nodule formation. X645.

C—Nissl stain, left XII nucleus showing microglial proliferation and edema with beginning trigrolysis of neurons. X150.

D—Nissl stain, normal anterior horn cell (motor neuron). X1055.

E—Nissl stain, right XII nucleus showing perivascular lymphocytes. X150.

F—H & E stain showing perivascular lymphocytes collections. X645.

G—H & E stain showing perivascular gliosis. X645.

Patients with bulbar poliomyelitis, who cannot breath without the aid of a respirator, should be a challenge to the physical therapist. Here you have a patient who is entirely dependent on a mechanical machine for sustaining his life; the object is to get the patient to breathe on his own, independent of all mechanical aids. It is, indeed, fortunate that voluntary muscle has such an amazing power of regeneration. This factor, more than any single other, is responsible for the partial or complete recovery of the poliomyelitis patient. Assume for the present that we have a bulbo-spinal poliomyelitis patient in an iron lung with weakness and atrophy of intercostal muscles and partial diaphragm involvement. Tracheotomy has been done and positive pressure with oxygen is in use. The pressure regulation of a respirator is very important. The negative pressure setting is to be adjusted to the necessary position in order to cause a tidal air flow of close to 500 c.c. Far too often the patient tells the nurse or doctor how much negative pressure he needs. This often is much greater than the normal tidal air and results in hyperventilation with disturbance of acid base equilibrium, and serious consequences. More than one patient has died from respirator hyperventilation.

I believe a poliomyelitis respirator patient is essentially lazy and is quite content to have a machine breathe for him. To stir from this pleasant restful place into an atmosphere where each breath for life is an effort, and at first a very conscious one, requires for more than just pushing and prodding. The patient must be able to see that all his physical efforts of breathing are being rewarded by at least some progress no matter how small. This is the prime responsibility of all concerned; the doctor, nurse and physical therapist.

Once the patient is ready to start breathing exercises a program should be developed. If he is still on positive pressure he should be encouraged to breath with the respirator open and with as little positive pressure as is necessary. He should breath to the point of fatigue and then take a good rest allowing the machine to do all the breathing. These exercises should be repeated four to six times daily. Always have the patient well suctioned out, and tell him everything you are doing to his machine. When a patient has not breathed on his own for a time, the automatic respiratory rhythm is lost and he must remember to take each breath. Therefore, it is necessary to set his respiratory pace and count to him while watching the main bellows. As the patient is able to stay out longer and longer, he is ready to start breathing with the closed machine on each respiration for a gradually increasing period of time. He should be off positive pressure at this point. To determine this new negative pressure sitting, have the patient breath with the machine and adjust the tidal air to 450-500 c.c. by the negative pressure control. Now the patient must breath with the machine on each breath or his tidal air falls below normal. He should start with a 2 minute exercise four times a day, and increase by one to two minutes daily as tolerated. As

the intercostal muscles hypertrophy, he will be able to assume more and more of the respiratory effort, and, therefore, the negative pressure will be less and less during these exercise periods. Soon the patient will begin to automatically breath with each respiration. At this point he will be able to do some breathing entirely on his own. From here on a graphic record should be kept on the wall where he can observe his daily progress. Patients with much intercostal involvement have shortening of these muscles as would be expected; this will impair vital capacity. The easiest method to stretch these muscles is to hyperventilate the patient in the respirator for two minutes three times a day at negative pressure of 30, with the patient taking as deep breaths as possible. Hot packing the anterior chest wall at the same time will also assist. Once the patient is free from the iron lung for one-half day or more, bedside corrective therapy and occupational therapy, directed at muscle strengthening, becomes a necessary part of the daily rehabilitation routine. As the patient becomes stronger the activities in the therapeutic pool are increased. The next step is to introduce the patient to the corrective therapy gymnasium where walking exercises and gradual resistive exercises become a daily part of the rehabilitation program.

A word about mental rehabilitation. The patient lying in a respirator can only see the ceiling and walls if he can turn his neck. With a mirror everything is reversed side for side. He cannot scratch his face or head and he cannot see any part of his body. He can only talk when the machine is expiring, and he must synchronize his swallowing with the respirator. He is thankful to be alive and have the respirator breathing for him. He cannot change position except in the extremities, if not paralyzed.

For the first two weeks or more he is unable to sleep in this strange tank and the first dreams are indeed weird. If he is the breadwinner, the income is terminated and bills are accumulating. The world from his vantage point is indeed strange. Without the mirror, I always seemed to be looking into someone's nostrils. Putting yourself in the place of the patient will quickly suggest the fears associated with an electrical power failure, claustrophobia, and the ever-present hazard of fire to mention a few. Any mental rehabilitation should be directed toward helping the patient to get out of his respirator.

In conclusion, and speaking as a grateful recipient of well directed and concentrated physical and corrective therapy, I wish to take this opportunity to compliment and congratulate the physical and corrective therapy sections of our hospital and all rehabilitation therapists everywhere for the diligent efforts they have put forth on behalf of all poliomyelitis patients.

The Forum

EDITOR'S NOTE: As stated in the last journal, it will be the purpose of this column to publish selected technical questions and opinions submitted by readers to a panel of experts for reply. These experts will be selected from the various specialties related to the field of rehabilitation.

ANOTHER OPINION

Why do some paraplegic patients, who have become expert crutch walkers go home and remain satisfied with wheel chair existence?

From: KENNETH DENING, B.S., M.E., Corrective Therapist, P.M.R.S., Cushing V.A. Hospital, Framingham, Massachusetts and co-author with Deyoe and Ellison, AMBULATION, Funk and Wagnals, N.Y.C., N.Y., 1951.

We were particularly impressed by the figures for paraplegics from Kennedy V.A.M.T.G. Hospital, who are actually using their crutches, after becoming expert crutch walkers.

We have just checked our figures, collected from four years of operation of the Medford Massachusetts Ambulation Clinic. Thirty-seven (37) have gone through the clinic with these interesting findings. Nineteen (19) use crutches in the course of their daily living, whether it be earning their living; going to school or keeping house. They combine the use of wheel chair and crutches as all paraplegics must do, but the greater portion of their time is on crutches. This number includes men and women and one boy under ten (10) who is going to grade school. Two (2) older women we include under maximum benefit. Both earn a living from work done sitting in wheel chairs. They still use crutches one to two hours a day. Eight (8) are continuing training, but two (2) of these are using crutches for ten (10) to twelve (12) hours a day. One (1) girl is going to Junior College; the other is doing housework and doing her shopping on crutches. Eight (8) have dropped out of training for various reasons—financial, medical, indifference, etc. All are non-veterans.

This group comprises true paraplegia, with lesions ranging from D-2 to L-1. I think this shows that the omnipotent factor of motivation is the desire to use crutches.

(Note. *Another factor in this report, which shows that 50% of these trainees using crutches successfully after becoming expert, is the fact that each trainee paid for the ambulation training*)

QUESTIONS

1. What constitutes a good progress note?
2. What method of measurement should Corrective Therapy use in the evaluation of functional disability or in the evaluation of progress or the lack of it?
3. What exercise program is most beneficial for weakened or restricted shoulder motion?

"From Other Journals"

JOOST A. M. MEERLOO, "First Aid in Acute Panic States," *American Journal of Psychotherapy*, V:367-371, July, 1951.

During air raids and other disasters the therapist may be called upon to treat large numbers of mentally disturbed victims. He should have a simple scheme of treatment ready, especially as the therapist himself will be affected by the same dangers and fears. Mass panic can be prevented, but acute danger tends to provide all kinds of mental defense reactions, which may be expressed as pathological fears. Catastrophes may throw a group of people into a temporary state of infantile regression. In general we encounter two types of panic behavior: General Paralysis and Temper Tantrums. Variations may include painful vasoconstrictive reactions and frequent urination. Both may be relieved by the explanation that they are fear reactions.

First aid procedures should include a paternal, understanding attitude on the part of the therapist and removal of the patient to a quiet place. No narcotics or sedatives should be administered, but hot coffee, soup or cigarettes may be more effective than any narcotic. The panicky patient should be laid down in a quiet place, calmed and recuperative sleep suggested. Later treatment at a psychiatric clinic may enable the patient to relive the experience mentally.

PJR

WALTER LINCOLN PALMER, "Medical and Social Problems of Population—Trends and Implications," *The Journal of the American Medical Association*, 147:1187-1190, November 24, 1951.

In the United States the total population is aging and still increasing in size, although a downward trend is probable within the foreseeable future. An increase must be expected in problems concerning chronic diseases, emotional disturbances of old age and the constantly increasing burden placed on the wage earners. In most of Western Europe and North America the net reproduction rate is less than that required to maintain a population which reproduces itself. The change in age structure of the population has resulted from a decrease in the birth rate even more than from a decrease in the death rate. The progressive decline in the birth rate has been largely due to voluntary control of conception. The Japanese birth rate is falling significantly, but that of India, China, Egypt, Latin America and Puerto Rico is increasing rapidly. If present trends continue the struggle for survival will become desperate.

PJR

"Biodynamics and Psychiatry," *The Lancet*, *p.* 826, November 3, 1951.

In experimental work on the production of neurosis in animals Dr. Jules H. Masserman found that there were four main principles of biodynamics:

1. All, or nearly all, motivation derives from the biological needs of the organism.

2. Every organism adapts itself to its environment in terms of its own life experience.

3. The organism reacts to frustration from its environment either by a change of technique or a change of goal.

4. When two strongly motivated methods of adaptation are mutually incompatible, an impasse results and the organism develops a neurosis. PJR

A. V. HILL, "The Mechanics of Voluntary Muscle," *The Lancet*, pp. 947-951, November 24, 1951.

Optimum speed of muscle movement depends chiefly on a balance between two opposing factors: speed of movement and duration of contraction. If either the load or the speed is increased, the muscle may adjust by varying the number of fibre groups employed or by varying the frequency of their response, or both. Variation of frequency occurs in a complete randomization of phase over the individual fibre groups, thus producing apparently smooth contraction. It has been shown experimentally that muscles can oppose motion with much less cost than they can produce it. A contracting muscle can oppose a fairly rapid stretch with much greater force than it can exert when shortening. Fairly rapid flexion being abruptly changed to extension, or vice versa, may explain many serious injuries in athletics. The much smaller extensibility of a tendo nwhen under considerable stretch provides an added source of danger. Differences in muscle speed are dependent not on visible structure but on the physiochemical and biochemical make up of the muscle substance. Muscles are adjusted in speed to the particular functions they have to fulfill. Muscle tone is commonly attributed to low frequency stimulation, but even without it a muscle remains taut. The force exerted by a muscle is not proportional to its anatomical cross-section, but to the total cross-section of its constituent fibers, provided these are not too oblique to the line of pull. However, by arranging muscles obliquely a greater number can be packed in and greater force exerted. This causes complex muscle forms with the result that a strong contraction increases the internal hydrostatic pressure. During strong continued contraction this may be great enough to stop the flow of blood completely by compressing the blood vessels. Stiffness following exercise seems to be due to injury which most likely is distributed microscopically through the muscle fibers, connective tissue and possibly muscle spindles. PJR

CLETUS L. KRAG and WILLIAM B. KOUNTZ, "Stability of Body Function in the Aged. I Effect of Exposure of the Body to Cold," *Journal of Gerontology*, 5:227-240, July, 1950.

Nineteen unclad subjects between the ages of 22 and 91 were placed in a cabinet with temperatures at 5-15° C. Some of the younger subjects developed a backache caused by increased muscle tonus and tremor. An increase in oxygen consumption appeared more rapidly in the older subject than in the younger ones, indicating less efficient mechanisms for the prevention of heat loss. However, the older subjects seemed to experience less discomfort than did the younger.

PJR

FRANCES BAKER, "Exercise in the Treatment of Asthma," *Archives of Physical Medicine*, XXXII:30-33, January, 1951.

The aim of the program of exercise in asthma is to train the patient into the correct pattern of breathing and to develop the general motor system back to normal power and control. In the asthmatic patient the dome of the diaphragm may rise or flutter rather than descend on inhalation. Vital capacity is markedly decreased and posture is routinely poor. The patient should be placed supine and taught to relax. A modified Jacobson method can be used. While still in the supine position the patient is taught controlled use of the diaphragm. Rhythmic breathing in the sitting position is then practiced. Resistive and strenuous exercises for the neck and shoulder girdle and chest should follow. Competitive sports, such as boxing, are valuable to give the patient a feeling of equality with his fellows.

PJR

MAX D. KOSSORIS, "The Facts About Hours of Work vs. Output," Reprinted from *Factory Management and Maintenance*, February, 1951.

The optimum work week depends upon the type of workers, their age, and type of work. With men, going from a 40 to a 48 hour week on the average increases hours 20% and work output 18-19%. Up to 60 hours a week, higher total production results, but there is a progressive reduction in production per hour. Over 60 hours results in a actual loss of production. The British found that on a work week of 55-1/2 hours 13% more was produced than on one 74-1/2 hours. A U. S. plant produced 12% more on a six day week than on a seven day one. Longer hours result in increased fatigue, decreased efficiency, increased absenteeism and an increased accident rate. Rest periods in the morning and afternoon improve efficiency even under a 40 hour week, especially if the employee is given an opportunity to eat.

PJR

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EDITORIALS

"THERE ISN'T ANY NEED FOR A HUMAN SCRAP HEAP"*

These are the words of our elder Statesman, Mr. Bernard M. Baruch. Wise words, presenting sound counsel.

Two World Wars in a single generation, calling into military services the fathers and sons of millions of our fellow countrymen, has produced an awareness of the problem of providing adequate physical, mental, occupational, educational and social rehabilitation opportunities for the general population.

All of these services are available to our handicapped veterans. This group formerly representing one of the most productive cross sections of our society, is but a small portion of the disabled and handicapped in our rapidly aging population.

Every day, at the Veterans Administration Hospitals, we see the severely handicapped being discharged, capable of returning to work at their former employment; to a new occupation which has been learned and found commensurate with their disability, or to care for themselves in the home environment.

This enabling return to employment is gaining momentum and recognition through the conscientious efforts of the Physical Medicine Rehabilitation Services all over the country. Stressing the return to work, is a continuing effort of the physical therapist, the occupational therapist, the corrective therapist, the manual arts therapist, the educational therapist, the blind orientators, the speech therapists, the psychotherapists, the vocational councillor, the social worker and all who are engaged in the ancillary services of medical rehabilitation.

It is only in proportion to our recognition of the need for adequate civilian rehabilitation opportunities to care for the increasing number of disabled in our aging population and to provide the man power for our expanding defense effort, that we will have accepted the challenge of our elder Statesman, and be able, in truth, to say: "There Isn't Any Need For A Human Scrap Heap."

CREDIT FOR SLOGAN TO FORMER EDITOR

The editor is very happy to learn, that he was in error, in making the statement on the editorial page of the January-February issue, which said, "the author of the slogan, 'What they have lost is in their past. Our job is to help them make a future with what they have left.', is unknown." Full credit for this slogan should go to Philip R. Davis, who was editor of our Journal from 1947 to 1949 and a charter member of the Association.

Many readers will remember that this concise statement of rehabilitation objectives, which we have used as a guide post, first appeared on the front page of our Journal. Since that time it has appeared in the movies and been printed many times. It is pleasing to know that this statement of objectives originated with one of our members.

The President Reports

Our country is now engaged in a mass defense production reorganization second to none. One of the most important factors in an industrial nation is manpower. Manpower is essential to fulfill the tasks required for production.

A tremendous and almost completely untapped cource of manpower lies in our physically handicapped population. There are approximately 2,500,000 such individuals in our nation to-day who could be contributing members of our defense production efforts as productive citizens of their respective communities.

It is evident that an effective program of total rehabilitation is essential to achieve this goal. With such a program the economic factors concerned would change considerably in every industrial community. As non-contributing members the unemployed handicapped are a drain on the community resources. With an all out rehabilitation program this large manpower group of non-contributing individuals could be made productive, self supporting, and an asset to the community at large. This would bolster our civilian and defense production immeasurably, and would definitely reduce the financial burden upon society.

Between the physician and the vocational counselor, there is a long road over which most physically handicapped individuals must travel before rehabilitation is accomplished. It is along this road that the Corrective Therapist, as a member of the total Physical Medicine Rehabilitation team, takes his rightful place in the care of these individuals. Under medical supervision he administers the physical retraining in skills necessary for the carrying on of activities inherent in daily living and common to all types of work.

The Corrective Therapist retrains the disabled person to walk and to travel, to care for his daily needs, to use methods of transportation, and ordinary toilet facilities, to apply and remove his own prosthetic devices and teaches the seemingly simple tasks which are usually overlooked, and which may spell the differences between social and economic adjustment and failure.

—Leo Berner

It is right to be contented with what we have, never with what we are. —*Sir J. Mackintosh*

Killing time is one way to murder opportunities.
—*Stephen Martino*

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*See page 24, News and Comments. Mr. Baruch receiving Honorary National membership award from the New York Chapter.

Chapter Activities

Editor's Note: Send all reports of Chapter Activities for publication in this column, to Harold M. Robinson, 3411 Birch Lawn Avenue, Roanoke, Va. Send copies of Chapter News Letters to the editor.

NEW ENGLAND CHAPTER

Approximately sixty members and guests attended the open session of the conference of the New England Chapter held at Springfield College, December 1st. Following a morning business meeting and luncheon, the group heard addresses by Dr. Isadore Scherer, Chief Psychologist at Northampton V.A. Hospital and H. Harrison Clarke, Ed.D., Director of Graduate Study and Research for Springfield College.

Dr. Scherer briefly outlined technique and procedure in research which Corrective Therapists can use in the hospital situation. Some 20 research problems relating to the use of adaptive sports and play in the treatment of neuro-psychiatric patients were outlined. Dr. Clarke presented a demonstration and discussion of orthopedic strength testing by the cable tension method. This method was developed by Dr. Clarke and others, to accurately measure the relative strength of the normal and handicapped person in various muscular movements.

At the business meeting, Chapter President, Frank Deyoe, reported on the last meeting of the New York Chapter which he attended; the group discussed problems referred to the Chapter from the National officers.

The winter meeting of the New England Chapter was held on January 26, 1952, at the Boston YMCA on Huntington Ave. The afternoon session, which was open to the public, included addresses by Sidney Licht, M.D., Area No. 1, Medical Rehabilitation Field Supervisor, Veterans Administration; and Henry Heyl, M.D., Neurosurgeon at Hitchcock Hospital, Hanover, New Hampshire, and Senior Consultant in Neurosurgery at the V.A. Hospital, White River, Vt. A closed business meeting was held in the morning session.

LOUISIANA CHAPTER

The Louisiana Chapter recently held its first official meeting a tthe Veterans Administration Hospital, Alexandria, Louisiana. A general Rehabilitation meeting preceded the Chapter Meeting, and an enlightening program was presented. Mr. I. G. Sims, Assistant Manager of this hospital and Dr. E. M. Ellerson, Chief of Professional Services, welcomed the group in the absence of Dr. P. A. Waters, local Manager.

Speaking to more than fifty physicians, nurses, rehabilitation and social service workers, Dr. R. Bruce Wallace, Jr., 39th Division Surgeon of the National Guard, had as his topic "Rehabilitation from the Civilian Viewpoint in Private Clinics" and also discussed methods for sustaining the program.

Dr. Howell Brewer, Chief of PMRS, Shreveport V.A. Hospital, spoke on the topic "Corrective Therapy in PMRS." He emphasized the importance of Corrective Therapy in the rehabilitation program and how it functions with the general medical treatment.

Col. H. E. Walden, head of Louisiana College Athletic Program, explained the program of preventive medicine which has been introduced in many high schools and colleges throughout the state. He stated, "We hope the program of preventive medicine will ultimately raise the health standards of youths which will eventually lighten the load of the V.A."

The program was concluded with an interesting talk from Dr. W. P. Moore, Chief of PMRS at Alexandria V.A. Hospital. Dr. Moore said the aim in physical medicine is to facilitate the restoration of patients to normalcy, as near as possible, and fit them for work in some capacity.

The group attending the Chapter organization agreed to let Jack Watson, President, appoint officers needed. Cecil Brown, Chief of Corrective Therapy, VAH, Shreveport, La., was elected member to serve on the Public Relations Committee.

F. A. Merten, Executive Assistant of PMRS and Winton Enloe, Corrective Therapist, Alexandria V.A. Hospital, comprise the Constitutional Committee.

SOUTHEASTERN CHAPTER

Mr. Paul Fleer, Chief, Corrective Therapy, Dublin VAH, has been appointed Editor of the Chapter Newsletter for the coming year. The following members of the Chapter have been appointed Associate Editors: Fred Rutan, Chamblee VAH, Ga., Edwin Simmons, Dublin VAH, Ga., Martin Bailey, Augusta VAH, Ga., Jackson Cobb, Columbia VAH, N. C., Wayne Kirker, Fayetteville VAH, N. C., Albert Koball, Lake City VAH, Fla., Charles Ishmael, Coral Gables VAH, Fla., Chester J. Nadolski, Bay Pines VAH, Fla., Jessie E. Abbott, Tuskegee VAH, Ala., James Berry, Tuscaloosa VAH, Ala., Walter E. Beasley, Mountain Home, Tenn., Charles W. McHugh, Memphis VAH, Tenn., Robert E. McIntire, Murfreesboro VAH, Tenn., Cecil Painter, Nashville VAH, Tenn., Robert A. Parrish, Biloxi VAH, Miss., Lester Burrows, Jackson VAH, Miss., Donald E. Winkleblech, McDill AFB, Tampa, Fla. The following committees have been appointed by President Roy Hilliard for the coming year 1952. The Chairman of these Committees will render a report to the Chapter concerning the activities of their respective com-

mittees in the business session of the next Chapter meeting.

Professional Standards Committee
William A. Clark—Chairman
Jessie E. Abbott—Member
Edwin Taylor—Member

Convention Committee
Paul B. Bell—Chairman
Charles W. McHugh—Member
Herbert F. Seuss—Member

Chapter Membership Committee
Charles Ishmael—Chairman
Albert Koball—Member
Chester J. Nadolski—Member

Constitution Committee
Albert P. Tulley—Chairman
Paul E. Beck—Member
Kenneth Schulz—Member

The election of the representative assembly has been completed. All members are to be commended on the selection of seven outstanding members of the Southeastern Chapter. The following members were elected on a plurality basis: Everett M. Sanders, Tenn., Jack E. Jones, Fla., John Dixon, Tenn., Paul Fleer, Ga., Lester Burrows, Miss., George Sloan, S. C., William Clark, Ala.

NEW YORK CHAPTER

The Eastern New York State Chapter of the Association for Physical and Mental Rehabilitation and the New York Association of Rehabilitation Therapists held a joint clinical session on January 18, 1952 at the Institute of Physical Medicine and Rehabilitation, 400 East 34th Street, New York City. Co-Chairmen of the successful clinical session were Hyman Wettstein, Bronx, New York and Arthur Sandbank, Brooklyn, New York who represented each of the Associations. Acting as Honorary Chairman was Dr. Otto Eisert, Chief, Physical Medicine and Rehabilitation Service, Brooklyn Veterans Hospital. Guest speakers on the program were Dr. A. B. C. Knudson, Chief Physical Medicine and Rehabilitation Division, Veterans Administration, Washington, D.C., whose topic was "Physical Medicine and Rehabilitation," and Mr. Joseph H. Van Schoick, Executive Assistant, Physical Medicine and Rehabilitation Division, Veterans Administration, Washington, D.C., who spoke on the "Growth and Development of Rehabilitation." Dr. Arthur S. Abramson conferred the Association for Physical and Mental Rehabilitation Honorary Membership Award to Mr. Bernard Baruch, the elder statesman, who is the donor of the fund for research and training in Physical Medicine.

Following the presentation a panel discussion was held on "How existing Rehabilitation programs can be improved" with Joseph H. Van Schoick acting as moderator. Members of the panel who contributed to the discussion were, Bernard Berner, Castle Point, New York, Sidney Brent, Bronx, New York, Vincent T. Circhio, Brooklyn, New York, Irving Friedman, New York, N. Y., and Gilbert A. Guarino, Lyons, New Jersey.

MIDWEST CHAPTER

Ray Piaskowski, M.D., Woods V.A.H. and professor at Marquette Medical School, is the most recent addition to the chapter's advisory board.

The spring meeting of the chapter will be held May 31, 1952 at the V. A. Center, Wood, Wisc. Les Root is in charge of arrangements and those attending can be assured of a well planned program. At this meeting, new officers will be elected for the year.

MEETINGS OF PROFESSIONAL INTEREST IN 1952

March 17-19	Ohio State Health, Physical Education and Recreation Asso., Cincinnati, Ohio
March 26-29	Central Dist., Asso., Health, Physical Education and Recreation, Topeka, Kansas
March 29-31	Indiana State Asso. for Health, Physical Education and Recreation, Spring Hill Park, Indiana, Doris Julian, Baker School, Evansville, Indiana
April 6-9	Joint Session of California and American Asso. for Health, Physical Education and Recreation, Hotel Biltmore, Los Angeles, Cal., Convention Chairman, Dr. C. A. Troester, 1201 16th St., N.W.
April 11	Kentucky Association of Teachers of Speech, Kenisville, Ky., Nettie Perkins, Danville H. S., Danville, Ky.
April 23	Chicago Society of Physical Medicine and Rehabilitation, V.A. Center, Wood, Wisconsin
April 27-May 1	Eastern Asso. Health, Physical Education and Recreation, John H. Shaw, Syracuse University, Syracuse, N. Y.
May 5-9	Regional Vocational Rehabilitation Asso., Mobile, Alabama, Chairman, D. D. Beckinan, 421 Calhoun Bldg., Columbia, S. C.
May 19-21	South West Regional Vocational Rehabilitation Asso., Convention Chairman, D. W. Russell, 303 Educational Bldg., Little Rock, Arkansas
May 8-10	Pennsylvania Society for Crippled Children, Allentown, Penna., Convention Chairman, G. E. Reimer, 1107 N. Front St., Harrisburg, Penna.
July 8-12	Association for Physical and Mental Rehabilitation, Hotel Schroeder, Milwaukee, Wisconsin; Convention Chairman, George H. Reichle, V.A. Center, Wood, Wisconsin.

Book Reviews

A TRANSLATION OF GALEN'S HYGIENE (DE SANITATE TUENDA)

By Robert M. Green, M.D.

Pp. 277. Charles C. Thomas, publisher, 301-327 East Lawrence Ave., Springfield, Illinois. Price $5.75.

This is the first translation into any modern language of Galen's De Sanitate Tuenda; it includes six books written by this famous physician in the first century. Generally speaking, Galen proceeds from the birth of a child and discusses what he had thought to be most important in maintenance of health in the various stages of life.

In Book I, "The Art of Preserving Health," are a series of very short chapters (as found in the other five books) with a summary included. Following a unique definition of health, Galen writes about the objectives of hygiene, the use and value of exercise, hygiene of bathing and massage, and hygiene of the younger years. Among some of the peculiar but interesting ideas he puts forth are many basic concepts in philosophy of exercise, psychology, and physiology which we of the present day are still embracing. Galen also discusses some topics which even today would provoke heated debate.

Exercise and Massage are explained in Book II; Book III describes Apotherapy, bathing, and fatigue. Galen's discussion is always directed toward one who is perfectly constituted in body, and a person who has the time for the sole purpose of maintaining this state. During Galen's time, this naturally meant that his teaching was practiced by only a select few. Galen's recommendations for the procedure both before and after exercise are very interesting because of the contrast to our present day practices. The underlying philosophy of exercise which he advocates is a very stimulating and thought-provoking issue; it is one with which many present-day physical educators will disagree!

The remaining three books include: forms and treatment of fatigue; diagnosis, treatment and prevention of various diseases, and prophylaxis of pathological conditions. Chapters of common interest are, "Causes and Symptoms of Ulcerous Fatigue," "Defense and Justification of Hygiene," "Theory of Therapeutics," and "Sex Hygiene and Personal Hygiene."

A criticism of this book is the profuse verbiage, frequently over very non-consequential points. His style is the exact opposite of many of our modern writers. As Thoreau was the master of brevity, so Galen was a strong challenger for the leading role of verbosity. If you can resign yourself to his unusual style, the results will be very rewarding. In the words of the translator, "this is a masterpiece of medical antiquity." This book is valuable not only for the historical revelation of hygiene as recommended by this famous physician in the first century, but one can also better appreciate just how some of our present practices and beliefs of today were shaped by this man. By contrast, it also shows how highly developed and comprehensive the personal hygiene of today has become.

J.A.B.

HANDBOOK OF PARAPLEGICS AND QUADRIPLEGICS

By Alma and Robert Frost

Published by Printmark Co., N.Y. (Copies available from Robert Frost, Inc., 66 Crest Drive, Tarrytown, N.Y. Price $2.00.)

This booklet is primarily directed toward orientation of paraplegics, quadriplegics, and their families on all phases of care and rehabilitation. It is a compilation of new material and important articles previously published. A brief explanation of these disabilities and an overall picture of rehabilitation are given. The necessary equipment for these patients has received comprehensive treatment, and a description of several homemade gadgets that have proven useful is included. Information on home care covers general daily needs, urological care, principles of bracing, physical activities, diet, treatment of pressure sores, and education and employment. Some methods of assisting a quadriplegic are also explained and illustrated.

The distinguishing feature of this booklet to therapists would be the inclusion of a comprehensive bibliography of books, films, and supply companies that are associated with treatment and care of patients with these disabilities.

J.A.B.

CORRECTIVE THERAPY EMBLEMS

Order Corrective Therapy emblems from Lewis Scholl, Chief, Corrective Therapy, VA Hospital, North Little Rock, Arkansas.

The cost at present is thirty-five cents each, plus postage. Emblems will not be sent unless cash accompanies the order.

Emblems are to be worn on the left side of the shirt above the pocket.

The emblem identifies the wearer as one of the ancillary therapists in the Physical Medicine Rehabilitation Service.

News and Comments

HONORARY MEMBERSHIPS

The Association for Physical and Mental Rehabilitation has conferred Honorary Membership to the following outstanding individuals: Dr. Louis Hopewell Bauer, President-Elect of the American Medical Association, Dr. Howard A. Rusk, Chief, Physical Medicine Rehabilitation, New York University-Bellevue Medical School, and Associate Editor, The New York Times and Dr. John Kershaw, Chief of the Rehabilitation Unit, United Nations. The honor bestowed by your Association was graciously accepted by the above.

Mr. Bernard Baruch receiving an Honorary Membership Award in the Association for Physical and Mental Rehabilitation from Dr. A. S. Abramson at the January 18th, 1952 meeting of the New York Chapter. Others on the platform are:—Dr. Eisert, Chairman, Mr. Leo Berner, President of the Association for Physical and Mental Rehabilitation. This meeting was held jointly with the Association of Rehabilitation Therapists at the Institute for Physical Medicine Rehabilitation, New York, New York.

REHABILITATION WARD AT WOOD, WISCONSIN

A rehabilitation ward unique to veterans hospitals in the country and to hospitals in Wisconsin was scheduled to be opened on Friday, November 16, 1951 at the Veterans Administration Hospital at Wood, Wisconsin.

The rehabilitation ward is unique because it places severely handicapped patients under close medical supervision in an intensive training program aimed at restoring them to as near normal function as possible.

Previously, these severely handicapped patients were scattered throughout the hospital in a dozen wards. Having them in one, permits closer personal supervision. Hospital discipline can be relaxed. In company with others similarly handicapped, the patients are spurred to greater efforts to help themselves.

The ward has forty beds in six ward rooms, which are attractively decorated. Beds are low to encourage the patient to get in and out of bed by himself and to make his own bed. The main feature of the rehabilitation ward, however, is the "achievement center," a large sunny room at the end of the corridor that is equipped with special devices for stengthening muscles of the patients. The patients come to the rehabilitation ward only after the acute stage of an illness or following surgery. They are leg amputees, paraplegics, polio victims, hemiplegics and certain heart disease cases.

The new ward is part of the Physical Medicine and Rehabilitation Service, headed by Dr. Ray Piaskowski, who is also head of the department of Physical Medicine and Rehabilitation of the Marquette University Medical School.

EDITOR'S TERM EXPIRES

Plaudits for Dr. Sidney Licht for a job well done as editor of the magazine Occupational Therapy and Rehabilitation. His five-year term as editor expired Dec. 31st. Dr. Licht has followed a policy of printing any article that offers something worthwhile to the field regardless of whether the author is a medical man or an unkown personality. We understand that Dr. Licht's successor, H. D. Bouman, M.D., will follow the same policy and this should be encouraging to all Corrective Therapists who have not reported on their results because they felt no one would publish their paper. After Jan. 1, 1952, the magazine will be called "THE AMERICAN JOURNAL OF PHYSICAL MEDICINE."

ACTIVATED IN MARINE CORPS

Louis M. Frazier, Jr., Executive Assistant P.M.R. Service at Kennedy V.A. Hospital, Memphis, Tenn., the efficient secretary of our Association—has been called to active duty in the Marine Corps and will report to Cherry Point, North Carolina for his assignment. He has been a member of the Association for the past five years and secretary since June 1950. The Association wishes him the very best of luck in his tour of duty as a Captain in Aviation Ordnance and hopes it will be a short and pleasant one.

So that our successful membership drive will not

bog down, Stanley Wertz, Associate Editor, will take over the work of Secretary. He will be assisted by James Stier, who will become Acting Circulation Manager.

PROSTHETIC AND SENSORY AIDS EXHIBIT

Rehabilitation workers visiting the New York area should plan to attend the Prosthetic and Sensory Aids Exhibit recently opened at the V.A. Regional Offices, 252 Seventh Ave. The exhibit includes a film, book and periodical library covering the field of prosthetics. On display are the latest commercial and experimental developments in arm and leg prostheses, as well as braces, crutches, hearing aids, plastic and cosmetic restoration work, materials used in prostheses construction and an historical panel tracing the development of prostheses through the ages. Written requests for information on prosthetics will be answered by the Director, Prosthetic and Sensory Aids Service, V.A. 252 Seventh Ave., New York City.

NEW CIVIL SERVICE REGISTER

A new Civil Service Register has been established in Washington. Applications should be mailed to: The Executive Secretary Committee of Expert Examiners, V.A., Washington 25, D.C. Be sure to indicate the location in which you wish to be assigned.

JOB OPENINGS

Mr. Earl B. Raymer of V.A. Hospital, 7300 York Rd., Cleveland 29, Ohio is looking for a person interested in a GS-5; however, if the Therapist has experience a GS-7 might be available in the near future. Because of the expanding program, the hospital is expected to hire approximately four more therapists.

Two transfers at V.A. Hospital, Indianapolis, Indiana, leaves two GS-5 openings. Those who are interested write Mr. William J. Zillmer, Chief, Corrective Therapy, V.A. Hospital, Fort Benjamin Harrison, Indianapolis 16, Indiana.

COLLEGE PHYSICAL EDUCATION ASSOCIATION CONVENTION

The College Physical Education Association is holding its annual convention in Chicago April 23, 1952. The meetings are at the Congress Hotel, Chicago, Ill. Mimeograph material, pictures and other visual materials are to be secured from the Corrective Therapy Section of Hines V.A. Hospital.

For additional information write to Mr. Sheldon L. Fordham, University of Illinois, Undergraduate Division, Navy Pier, Chicago 11, Illinois.

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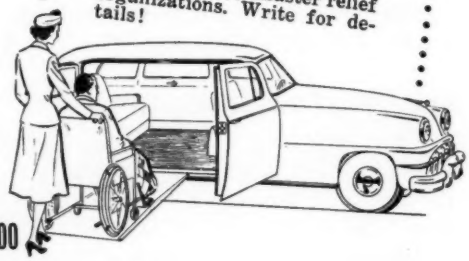

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SCIENTIFIC EXHIBITS FOR THE 1952 CONVENTION

Convention arrangements are being completed for presentation of scientific exhibits displaying specific developments in the field of exercise and activities in treatment in Physical Medicine Rehabilitation, as well as in related fields of medicine. This will provide an unusual opportunity for members of the Association to present material relating to developments in their specialties. Members are urged to assist in providing scientific exhibits of the highest professional quality.

Space for such exhibits is limited. You are urged to submit to the Convention Chairman, George M. Reichle, VA Center, Wood, Wisconsin, no later than March 1, 1952, intentions regarding your proposed exhibit, accompanied by title, a brief summary of its content, and a set of rough diagrams indicating the proposed lay-out and dimensions. Exhibits must be of the wall type, not more than two feet in depth.

In compliance with existing policies, exhibits proposed under auspices of the Veterans Administration should be submitted first for approval to the Chief Medical Director, Department of Medicine and Surgery, Central Office, Attention: Research and Education Service.

CONVENTION HIGHLIGHTS

Speakers scheduled to appear on convention program:

ADDRESSES OF WELCOME

Dr. N. J. Wegeman, President,
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Dr. Joseph G. Griffith, President
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The Billig Clinic
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American Psychiatric Association
1785 Massachusetts Ave., N. W.
Washington 6, D. C.

Dr. Ben L. Boynton
Professor of Physical Medicine
and Rehabilitation
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1205 Shorewood Boulevard
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Dr. Everill W. Fowlks, Chief,
Physical Medicine Rehabilitation
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Portland 7, Oregon

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400 East 34th Street
New York 16, New York

Dr. John M. Hadley
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Dr. Harold Hildreth
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Dr. George A. Kelly
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New York University, New York
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Mr. Jack Tracktir
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TENTATIVE SPEAKERS

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Forest Park Home
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Peoria, Illinois

Dr. Harry F. Harlow
University of Wisconsin
Madison, Wisconsin

Dr. Luke Sewall, Manager
VA Hospital
Downey, Illinois

Dr. Arthur S. Abramson, Chief,
Physical Medicine Rehabilitation
VA Hospital
Bronx, New York

Dr. Robert V. Miller, Chief
Physical Medicine Rehabilitation
Veterans Administration Center
Los Angeles 25, California

Dr. William Bierman
471 Park Avenue
New York, New York

Mr. R. F. Webster, Chief
Field Classification Service
Veterans Administration
Washington 25, D. C.

Mr. C. W. Bledsoe
Consultant for the Blind
Veterans Administration
Washington 25, D. C.

Mr. Walter Harnischfeger
President, Harnischfeger Corporation
4400 West National Avenue
Milwaukee, Wisconsin

Mr. Carl Purcell
Chief, Corrective Therapy
VA Hospital
Hines, Illinois

Mr. Paul Roland, Chief
Corrective Therapy
VA Hospital
Danville, Illinois

Dr. Alan Gregg
49 West 49th Street
New York City, New York

Tentatively, Dr. Joel T. Boone, Chief Medical Director of the Veterans Administration, and Mr. Bernard M. Baruch, America's elder statesman, are scheduled as speakers for the convention banquet at 7:00 P.M., Thursday, July 10, 1952.

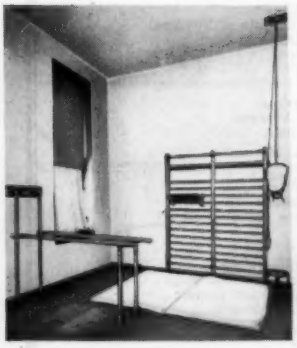
Members of the Association and their wives attending the annual convention in Milwaukee, July 8-12, 1952, are invited to spend Monday evening, July 7, 1952, as guests of the Blatz Brewing Company at its auditorium, 1047 North Broadway, from 7:30 P.M. to 11:30 P.M. The auditorium is within walking distance from the Hotel Schroeder and downtown Milwaukee.

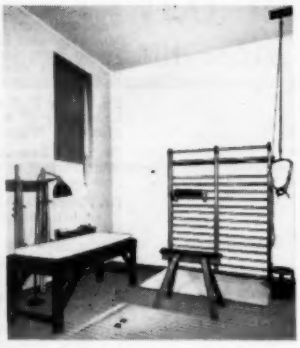
Only 250 people can be accommodated at this special get-acquainted party on the evening before the convention opens. Consequently, those desiring guest tickets are urged to make reservations now by writing Mr. Arlie J. Hughes, Corrective Therapist, Veterans Administration Center, Wood, Wisconsin, and stating the number of reservations. Unless notified to the contrary, your guest reservation tickets may be picked up at the Hotel Schroeder at any time before 6:30 P.M., Monday, July 7, or at the main entrance to the auditorium between 7:00 P.M. and 7:30 P.M. that evening.

Every effort is being made to publish a tentative program of Convention in the next issue.

APPARATUS FOR

Corrective Therapy





Views above and left show well-equipped rooms in the physical therapy department of Michael Reese Hospital, Chicago. Porter supplies stall bars, gym mats, chest weights and a wide variety of highly specialized corrective devices described in a catalog which is yours for the asking.

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